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ALSIKE CLOVER (*Trifolium hybridum*).

Alsike clover, a native of the temperate portions of Europe and Asia, is a perennial plant intermediate in size and appearance between red clover and white clover. It thrives especially well in cool climates with abundant moisture, and for this reason its maximum yields are produced in the North-Central States, especially in the Great Lakes region. It also grows successfully in the Northern States bordering the Atlantic and Pacific Oceans, in irrigated valleys of the Rocky Mountains, and in certain portions of Kentucky and Tennessee. Alsike clover endures both cold and heat better than does red clover, although the yields are greatly reduced by drought. This plant will grow on a wider range of soils than red clover, provided abundant moisture is available, and often thrives even upon water-logged soils. On this account it is adapted to growing under irrigation. However, it will not usually succeed on dry sandy or porous gravelly soils. Alsike clover is not as sensitive to acid soils or lack of humus as red clover, and it will make a good growth on soils where red clover will not succeed on account of "clover sickness." The branching, leafy stems, while not growing as large as those of red clover, commonly reach a height of 18 to 24 inches. When growing in mixtures with grasses or other clovers the stems are erect or ascending, but in isolated plants they are decumbent.

The herbage is smooth and decidedly more leafy than red clover. About 60 per cent of the hay consists of leaves.

USES OF ALSIKE CLOVER.

The uses of alsike clover are very similar to those of red clover, since it is grown principally in those places in the red-clover belt where for one or more reasons red clover fails to make a stand. It

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makes excellent hay or pasture, especially in mixtures with grasses. As a soil renovator and cover crop it is nearly equal to red clover.

Alsike clover as a pasture crop.—Alsike clover is used to a considerable extent as a pasture crop. This is particularly true when it is sown in grass mixtures, and especially with redtop on low, wet lands. When alsike clover is seeded alone it is ordinarily not pastured until after a crop of hay has been cut. It is eagerly eaten by all farm animals, but cattle and sheep should not be turned into a field when the clover is wet with dew or rain or when the cattle are very hungry, as bloating will be likely to occur. This is especially true in the spring. Alsike clover makes a better pasture for cattle than for horses, on account of its laxative qualities. In closely grazed pastures the stems are commonly spreading or nearly prostrate. For low, wet pastures it is recommended that a mixture of alsike clover and redtop be seeded.

Alsike clover as a hay crop.—Pound for pound, alsike clover is considered more nutritious than red clover, but, since seldom more than one crop is cut for hay and this crop is ordinarily smaller than the first cutting of red clover, it is not recommended that red clover be replaced by alsike clover except in places where the former will not succeed. Alsike clover should be cut for hay when in full bloom. However, the hay may be cut over a longer period than red clover, since the main stems continue to grow and produce new flowers. Yields of from 1 to 2 tons to the acre may be ordinarily expected. If seeded alone the plants are very likely to lodge.

Alsike clover as a soil-improving crop.—Like red clover, alsike clover is able to extract nitrogen from the air through the aid of tubercle bacteria on its roots. Part of this nitrogen, together with the vegetable matter which is contained in the roots and stubble, is turned back to the soil when the field is plowed.

Alsike clover also makes a good winter cover crop, in that it prevents the soil from washing and gullying and the available fertilizer elements of the soil from leaching. The fertilizers are taken up by the roots of the clover plants and again returned to the soil when the crop is plowed under.

Although alsike clover is a perennial plant, it ordinarily maintains successful yields for only three or four years. It is sometimes plowed under before this time and can thus be utilized in rotations in the same manner as red clover.

SEEDING ALSIKE CLOVER.

Like red clover, alsike clover may be sown either alone or in a small-grain crop in the early spring in the North and in early spring or autumn in the southern sections. When sown in the spring in small-

grain crops the common practice is to allow the alternate freezing and thawing of the ground to cover the seeds. Very often, however, better results are obtained if the seed is given a light covering with a smoothing harrow or weeder. When seeded alone the seed bed should be well settled and finely pulverized on top. On fertile, moist soil the seed should be sown with some grass, such as timothy, orchard grass, or redtop, to prevent lodging. The crop matures about the same time as these grasses and the quality of the hay is improved. On lighter soils, where the growth of grain is not heavy, successful crops are grown when seeded with a grain crop, or it may be seeded alone. When seeded alone, from 5 to 8 pounds of seed to the acre are usually required.

While the quantity of seed used in mixtures varies in different localities, ordinarily 5 pounds of alsike clover and 5 pounds of recleaned redtop seed are sown. A favorite mixture for the Southern States is 10 pounds of orchard grass, 5 pounds of perennial ryegrass, 3 pounds of redtop, and 4 pounds of alsike clover. Some farmers use a mixture of red clover and alsike clover, since the latter is a perennial plant and will cover the ground when the red clover runs out.

INOCULATION OF ALSIKE CLOVER.

Ordinarily inoculation is not necessary for alsike clover, since the same organisms which inoculate red clover will also inoculate it. However, if alsike clover is to be seeded on land where clovers have not previously been grown, it is well to provide inoculation. For this purpose soil from a field where red clover grows abundantly may be mixed with the alsike-clover seed, pound for pound. This mixture should be seeded either on a cloudy day or after the sun has gone down, and immediately harrowed in, since sunlight is very injurious to the inoculating germs. If soil can not be obtained, pure cultures of inoculating bacteria may be obtained free of charge from the United States Department of Agriculture.

SEED PRODUCTION OF ALSIKE CLOVER.

Commercial American-grown seed of alsike clover is mainly produced in Wisconsin, Michigan, Ohio, Minnesota, and Ontario. The seed yields are best on land which is moderately dry. The plants should be mowed when a considerable proportion of the heads are brown. The seed shatters badly as soon as it is ripe, and if not cut until ripe it should be mowed when moist with dew. Great care is necessary in curing to avoid the heating of the seed. Usually the first crop is harvested for seed, as in most of the regions where seed is grown the second crop does not have time to ripen. The early

growth is often pastured or clipped about the middle of June. This evens up the stand and brings the seed development at a season usually more favorable for a large yield. Clover hullers are used for thrashing the seed, and yields of 2 to 4 bushels per acre are ordinarily obtained.

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